

I-405 Corridor Program

Draft Study Plan for I-405 Corridor Program Draft EIS

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1.0 Introduction

This draft study plan outlines the environmental process to be followed for the I-405 Corridor Program NEPA/SEPA Environmental Impact Statement. It will be revised and expanded as additional information becomes available and as decisions regarding the environmental approach are reached with the Executive, Steering (interdisciplinary team), and Citizen Committees, and project management team (PMT). Study plan elements that will be expanded include descriptions of: the proposed action; range of alternatives that could satisfy the goals of the proposed action; environmental issues to be studied; and agency coordination requirements, among others.

2.0 Purpose and Need

2.1 Project History

Construction of the 30-mile Interstate 405 (I-405) in the early 1960s as a bypass around Seattle for Interstate 5 (I-5) traffic also opened the rural, agricultural countryside east of Lake Washington to increased commercial and residential development. Construction of the Evergreen Point (SR 520) floating bridge in 1963 further set the stage for rapid and substantial changes in demographics on the Eastside.

Today, I-405 has changed dramatically from a Seattle bypass to become the roadway of choice for most north-south trips for the area east of Lake Washington. More than two-thirds of the total trips on I-405 begin and end in the corridor itself. The remaining third have strong ties with the communities along SR 167 and developing areas to the east within the urban growth area.

With I-405 serving as the backbone of the Eastside communities' transportation system, the growing traffic congestion within the corridor has serious implications for personal and freight mobility, the state and regional economy, the environment, and local residents' quality of life.

2.2 Statement of Purpose and Need

The *need* is to improve personal and freight mobility and reduce foreseeable traffic congestion in the corridor that encompasses the I-405 study area from Tukwila to Lynnwood in a manner that is safe, reliable, and cost-effective.

The *purpose* of the proposed action is to provide an efficient, integrated, and multi-modal system of transportation solutions within the corridor that meet the project need in a manner that:

- provides for maintenance or enhancement of livability for communities within the corridor;
- provides for maintenance or improvement of air quality, protection or enhancement of fish-bearing streams, and regional environmental values such as continued integrity of the natural environment;
- supports a vigorous state and regional economy by responding to existing and future travel needs; and
- accommodates planned regional growth.

2.3 Discussion of Need for the Proposed Action

Growth in Travel Demand

Between 1970 and 1990, communities in the area affected by I-405 grew much faster than the Central Puget Sound Region as a whole. During the 20-year period, employment in the affected area increased over 240% from 94,500 to 323,175 and population rose nearly 80% from 285,800 to 508,560.

Population and employment continued to grow during the 1990's; in particular, employment has grown at an annual rate of almost 3.5%. Looking ahead, growth in the corridor through 2020 likely will keep pace with the rate of regional growth in the Puget Sound region. The I-405 corridor population and employment will increase by more than 35%. This means that by 2020 an additional 144,000 people are forecast to be employed within the study area, while the population is expected to reach approximately 765,000, an increase of more than 200,000 people from 1997.

Traffic Congestion

Today, several segments of I-405 already experience more than five hours of congestion per day in one direction. The most congested area of I-405, from I-5 in Tukwila to N.E. Park Drive in Renton, typically experiences 10-12 hours of congestion per day.

Traffic congestion on I-405 often results in blockage of mainline flows throughout the day by vehicles that cannot get onto the ramps at such locations as SR 167, I-90, SR 520, and SR

522. The spillover traffic from the ramps has created significant mainline traffic congestion and operational hazards throughout the I-405 corridor. This congestion also causes traffic to spill over onto local arterials.

Arterial Street Network

The I-405 Corridor includes a significant number of arterial streets maintained by local jurisdictions. One characteristic of the Eastside arterial street network is that it is not very dense, providing fewer lanes to carry general-purpose traffic and transit. In addition, much of the adjacent arterial system is discontinuous because of topography, physical features, and development patterns. I-405 currently carries a high levels of non-regional trips, while traffic congestion on arterial streets remains severe.

Freight Mobility

The central Puget Sound region serves as an important freight gateway to Pacific Rim countries. Automobiles, forest and agricultural products, communications and computer equipment and hundreds of other items continuously move over the region's roadways, and railroads, to seaports and airports. The region's roadways carry 304,000 truck trips each day, three-quarters of which are engaged in wholesale distribution. Approximately \$50 million in goods is transported along the I-405 corridor on a daily basis near Bellevue. System reliability and lower transportation costs reduce the cost of manufacturing and distributing goods, while contributing to economic growth and job creation.

Freight facilities do not exist on the I-405 corridor with the exception of the northbound truck climbing lane between SR 520 and NE 70th Street. I-405 continues to serve as a truck bypass for congestion backups in downtown Seattle and it also provides ready access to the distribution centers along SR 167 in the Kent Valley. Products shipped across I-90 from Eastern Washington reach points north and south of Seattle via I-405. At the same time, I-405 serves as a heavily used transport corridor for local freight delivery to and from the cities along the corridor.

Legislative Direction

Public officials' awareness of these trends in development, growth, and deteriorating mobility on the Eastside helped spur a comprehensive study of the I-405 corridor in 1995. The I-405 Multimodal Corridor Project (MCP) identified and evaluated a wide range of multimodal improvements to enhance mobility within the corridor. Recognizing the need for a rigorous public and environmental process to set the stage for identification and implementation of corridor improvements, the 1998-1999 State Legislature provided funding for a partnership of State, Federal, regional and local decision-makers to advance the process in an effective and timely manner through the I-405 Corridor Program. The outcome of the I-405 Corridor Program is expected to be a regional strategy that will respond to travel needs, accommodate future growth, provide for a sustainable environment, and enhance livability within the affected communities. The strategy will be advanced to the region's 2001 update of the Metropolitan Transportation Plan and Washington Transportation Plan.

3.0 Study Area

The study area for the I-405 Corridor Program EIS is divided into primary and secondary areas. The primary study area defines the boundaries within which the range of alternatives is expected to be identified. It extends approximately 1 to 3 miles on either side of I-405 between its southern intersection with I-5 in the City of Tukwila and its northern intersection with I-5 in Snohomish County. Please refer to Figure 1. The primary study area includes the Cities of Bothell, Woodinville, Kirkland, Redmond, Bellevue, Mercer Island, Newcastle, Renton, and Tukwila, as well as portions of the Cities of Lynnwood, Issaquah, and Kent, and adjacent unincorporated areas of King and Snohomish counties.

The secondary study area is not mapped with specific boundaries. It connotes a much broader area within which the indirect and cumulative environmental impacts of the alternatives may be evident. It is contiguous with the Corridor Needs Study for East King County (CONEKC) study area. It encompasses portions of east King County, Seattle, southern Snohomish County, and northern Pierce County. If the I-405 Corridor Program identifies alternatives that lie outside the primary study area, the study area can be enlarged to accommodate such alternatives.

4.0 Scope of Studies

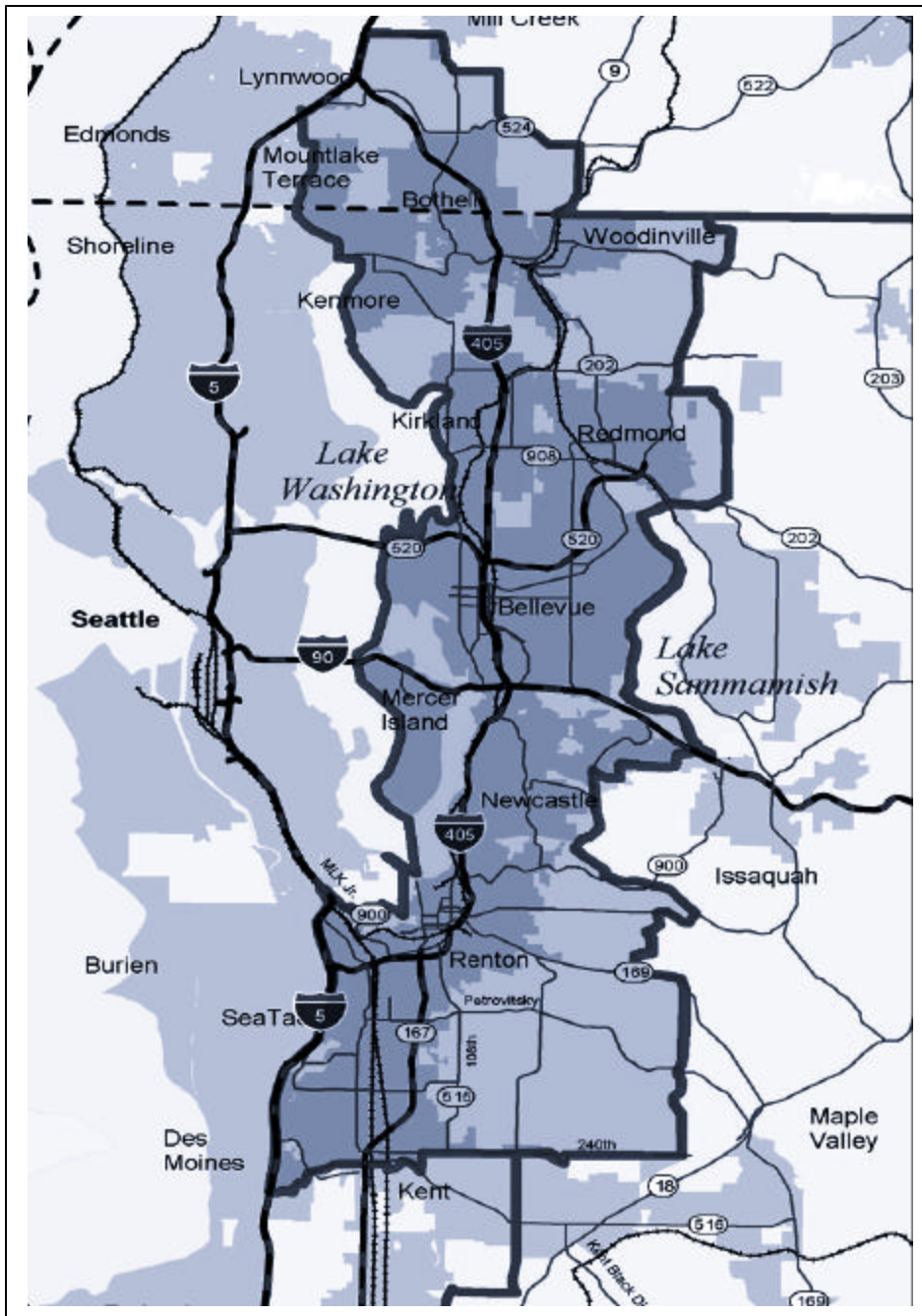
4.1 Alternatives

Alternatives to be evaluated in the NEPA/SEPA EIS may include:

1. Taking no action;
2. Implementing a range of Transportation System Management (TSM) and Transportation Demand Management (TDM) measures;
3. Expanding the capacity of the existing I-405;
4. Expanding the capacity and improving the continuity of the adjacent arterial network;
5. Expanding the capacity of the existing bus transit system;
6. Implementing new high-capacity transit within the corridor; and/or
7. A combination of elements of the preceding alternatives.

A variety of land use and development controls by local jurisdictions may be identified in the EIS, but these controls are not within the jurisdiction of the WSDOT or the FHWA to implement.

Figure 1. I-405 Corridor Program EIS Primary Study Area



4.2 Level of Definition and Analysis

Two primary objectives of the environmental review process are: (1) to develop the necessary information to determine the reasonableness and feasibility of each alternative advanced for detailed study in the EIS; and (2) to evaluate the relative performance and environmental consequences of each alternative at the level of detail needed to identify meaningful differences in their performance, effectiveness, environmental consequences, and opportunities for mitigation of adverse impacts. In response to these objectives, the environmental review will focus on the issues and level of analysis needed to inform strategic decision-making regarding corridor-level modal solutions, TSM/TDM actions, and related land use measures.

Corridor alternatives for the I-405 Corridor Program EIS are proposed to be presented and evaluated at a scale not less than 1 inch equals 2,000 feet. In some cases, an improvement contained within a package of solutions (such as an individual interchange modification) could be presented at a scale of 1 inch equals 500 feet or less if the design data are available and if warranted by the potential for substantial adverse impacts.

Adoption of a 1 inch equals 2,000 feet scale is believed to be appropriate for the I-405 Corridor Program EIS based on the magnitude and geographic extent of the proposed action and potential alternatives, the urbanized nature of much of the corridor, and the level of pre-design information that is available from previous studies within the corridor. For example, at a scale of 1 inch equals 2,000 feet it might require about six to eight 11x17 inch maps to portray the entire 30-mile corridor allowing for adequate overlap between maps.

The 1 inch equals 2,000 feet scale also will help maintain the analysis at the appropriate corridor level of detail. This level of detail is commensurate with the substantial volume of existing digital data for the corridor, effective use of GIS as an analytical tool, and limited reliance on field reconnaissance.

4.3 Areas of Primary Importance and Potential Controversy

Primary areas of concern identified by WSDOT personnel, local public officials, Federal and State resource agencies, and citizens include:

- Sensitive siting of facility improvements and effective mitigation of adverse effects;
- Relationship of this study to other facility improvements already proposed by WSDOT, Sound Transit, and local jurisdictions within the corridor;
- Relationship of this study to the on-going Trans-Lake Washington Study;
- Threatened and endangered fish, habitat, and Endangered Species Act issues;
- Stormwater runoff and effects on water quality and quantity;
- Wetlands and aquifer recharge areas;
- Effects on regional and local air quality;

- Noise from operation of existing facilities and proposed improvements;
- Displacements, loss of open space and parks, and effects on community cohesion;
- Accommodation of planned growth and development; and
- Relationship to the Washington State Growth Management Act and plans and policies of local jurisdictions.

4.4 Section 4(f) and Section 6(f) Involvement

Effects on specific Section 4(f) or Section 6(f) resources have not been identified at this stage in project development, and may not be known until after preparation of the Final Study Plan. Potential effects on any significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site will be evaluated in accordance with Section 4(f) of the Department of Transportation Act and Section 6(f) of the Land and Water Conservation Fund Act of 1965, as appropriate.

Preparation of a Section 4(f) Evaluation and/or a Section 6(f) Environmental Impact Assessment (EIA), if necessary, is expected to be tiered consistent with the corridor level of analysis provided in the EIS. A subsequent project-level Section 4(f) Evaluation and EIA would be prepared, if required, during follow-on project-level environmental review and preliminary engineering.

4.5 Section 106 Coordination and Consultation

Effects on specific Section 106 resources have not been identified at this stage in project development, and may not be known until after preparation of the Final Study Plan. Potential effects on any significant archaeological, historic, or cultural resource will be evaluated in accordance with Section 4(f) of the Department of Transportation Act (discussed above) and Section 106 of the National Historic Preservation Act.

Preparation of an archaeological and/or historic survey and report, if necessary, is expected to be tiered consistent with the corridor level of analysis provided in the EIS after prior coordination with the Washington State Office of Archaeology and Historic Preservation. A subsequent project-level survey and report would be prepared and, if required, consultation would be conducted during follow-on project-level environmental review and preliminary engineering.

4.6 Section 7 Coordination and Biological Assessment

Impacts and level of effect on Federally listed threatened or endangered species have not been identified at this stage in project development, and may not be known until after preparation of the Final Study Plan. Potential effects on listed threatened or endangered species will be evaluated in accordance with the Endangered Species Act.

Preparation of a Biological Assessment under Section 7(c) of the Endangered Species Act will be tiered consistent with the corridor level of analysis provided in the EIS in coordination with the National Marine Fisheries Service and/or U.S. Fish and Wildlife

Service. A subsequent project-level Biological Assessment will be prepared, if required, during follow-on project-level environmental review and preliminary engineering.

5.0 Cooperating Agencies

Cooperating agencies have not been identified at this stage in project development. Federal and state agencies with permitting authority, other vested interest in the proposed action, or special interest or expertise will be asked to become a cooperating agency during the scoping process.

6.0 Studies to be Prepared and Areas of Responsibility

Corridor-wide, system-level (planning-level) socioeconomic and environmental impacts will be evaluated in the EIS by placing substantial reliance on existing digital data that will be evaluated using GIS. The I-405 Corridor Program EIS will not evaluate project-level, site specific impacts of individual improvements or design options; these will be assessed as necessary during subsequent preliminary engineering, when design decisions are made.

A discipline study will be conducted for each area of potential environmental impact. The results of each study will be documented in an expertise report prepared in accordance with Section 4-9, Expertise Reports, of the WSDOT Environmental Procedures Manual, M 31-11. A draft and final methodology report corresponding to each discipline study will be prepared by the consultant for review and approval by the Steering Committee, IDT, and/or other technical expert(s) within the WSDOT prior to initiating detailed technical analyses.

The consultant team member that is responsible for preparing each discipline report is noted below in parentheses. The preliminary scope of studies, field investigations, data sources, analytical approaches, level of analysis, and agency coordination proposed here will be revised to reflect on-going coordination with the Steering Committee, IDT, and other Federal and State resource agencies. Discipline reports will be prepared for the following elements of the environment.

6.1 Air Quality

(Parsons Brinckerhoff) A regional (study-area) burden analysis of emissions will be performed for nitrogen oxides (NO_x), carbon monoxide (CO), and volatile organic compounds (VOCs) using average speeds, vehicle mix, and vehicle miles traveled (VMT). Emissions will be predicted using the most recent MOBILE model adopted by the PSRC. A table of vehicle emissions by alternative will be prepared.

Preparation of CO hot-spot analyses will be deferred until preparation of subsequent project-level environmental review; however, anticipated likely hot-spot locations will be identified in the corridor EIS. The potential problem intersections will only be identified for the alternatives for which level II traffic analysis is completed and only for intersections

within the four key sub-areas evaluated with the Integration model. Particulate matter less than 10 micrometers (PM10), total suspended particulates (TSP), and ozone concentrations will not be estimated in the corridor EIS. A conformity determination will not be completed.

6.2 Noise

(Parsons Brinckerhoff) Ambient noise levels will be measured at a maximum of 25 representative noise-sensitive receptors in the corridor that likely would be affected by noise from the proposed alternatives. Leq(h) traffic noise levels at representative locations in the corridor will be predicted using FHWA's Traffic Noise Model (TNM) computer model. The modeled levels will be used to create generalized noise contours for the corridor. These contours will be input to the GIS system, and estimates of the number of affected receptors by type will be identified. The potential locations and effectiveness of noise walls will not be determined. Construction noise will not be estimated in the corridor EIS.

Products include a table of existing measured noise levels; table of distances from roadway that various noise levels (60,66,70 dBA) occur for existing and future conditions for entry into GIS system; and approximate number of impacted receptors for each alternative. The potential effectiveness of noise walls will not be calculated. Construction noise will not be estimated in the corridor EIS.

6.3 Energy and Natural Resources

(Parsons Brinckerhoff) Fuel consumption will be estimated for each alternative based on VMT and projected travel speeds. The methodology of *Procedures for Estimating Highway User Costs, Fuel Consumption, and Air Pollution* (USDOT, 1980) will be modified to apply to planning level corridor analysis. Construction and secondary and cumulative energy consumption will not be estimated in the corridor EIS.

6.4 Geology and Soils

(CH2M Hill) Mapped topographical and physical features that could substantially constrain or affect project design, construction, or operation will be identified. Surface soils and geologic conditions along the proposed routes, as shown in maps published by the U.S. Geological Survey, Washington State Department of Natural Resources, and U.S. Natural Resources Conservation Service, will be described. Sensitive or hazard areas as mapped by local jurisdictions will also be identified.

Affected areas will be estimated using GIS, and the relative impacts of the alternatives will be discussed. Discussion will be limited to the impacts of the alternatives on topography and physical features, including sensitive areas, based on published information about soil, geology, and geologic hazards. Short-term impacts due to project construction and long-term impacts during project operation and maintenance will be included. Decommissioning impacts will not be discussed. Typical discussions will include comparisons of the extent of cut and fill created by each alternative, descriptions of possible construction methods and approximate areas of disturbance, and potential impacts that hazards such as earthquakes, heavy rains, or high groundwater could have on the performance of the facilities.

Measures to mitigate potential impacts from construction, operation, and maintenance of the facilities will be identified. Measures to mitigate the effects of the identified hazards will also be described.

WSDOT will provide boring logs, soils reports, and plans of existing structures for existing WSDOT facilities within the study area. No subsurface explorations will be performed.

6.5 Surface Water Quality and Quantity

(CH2M Hill) Existing rivers, streams, and lakes will be identified that would be directly impacted or that would receive stormwater runoff from any of the alternatives. The drainage basins of the identified rivers, streams, and lakes will be delineated based on topographic maps from the GIS data base. Rivers, streams, and lakes with important aquatic resources will be determined from available literature and information obtained from resource agencies.

Applicable Federal, State, and local stormwater management requirements will be identified. Existing basin plans and/or watershed plans for the identified rivers, streams, and lakes will be reviewed to determine any additional stormwater management requirements that might apply to any of the alternatives.

The potential for each of the alternatives to increase erosion, sedimentation, stormwater runoff, and other construction-related pollutants will be estimated. Potential stormwater quantity and quality treatment measures that may be used for each alternative will be discussed, and potential locations for proposed major stormwater treatment facilities will be identified. Additional potential mitigation measures for stormwater quantity and quality impacts will be identified.

Long-term annual pollutant loads to receiving surface waters will be estimated using the methods described in the WSDOT *Highway Water Quality Manual* (WSDOT, 1988). Long-term operating effects on groundwater will be estimated based on the quantity and concentrations of pollutants generated, literature on regional geology and groundwater resources, and relevant design components of the alternatives. No flow or water quality data will be collected. No flow calculations will be done for surface water quantity, except as needed to estimate annual pollutant loading to receiving waters. If flow data are available for some water bodies, those data will be used.

Field reconnaissance and investigations will be limited to particularly sensitive surface water resources where existing data are not sufficient to adequately characterize impacts and assess the potential for avoidance or effective mitigation. No calculations will be done to determine the sizes of surface water collection, conveyance, and/or treatment facilities.

General secondary and/or cumulative impacts of each of the alternatives on surface waters will be identified based on land use changes identified in the Land Use Expertise Report.

6.6 Groundwater

(CH2M Hill) The baseline hydrogeologic/groundwater resources will be identified. This will include delineation of hydrogeology/aquifers, sole source aquifers, groundwater flow directions, recharge/discharge areas, domestic groundwater users, well fields/well field

protection areas, and groundwater quality. Data sources will include published reports prepared by Ecology and the U.S. Geological Survey, and well records on file with Ecology. Affected areas will be identified using GIS.

Potential short term/construction impacts to the quantity and quality of the groundwater resource will be identified. Potential long-term impacts to the quantity and quality of the groundwater resource based on the proposed alternatives will be identified. This section will include impacts of recharge area reduction, roadway surface water runoff recharge, spills of dangerous and hazardous chemicals, etc. Generalized cumulative effects caused by land use changes attributed to the project will also be briefly discussed.

Measures to mitigate potential impacts from design/pre-design, construction, operation, and maintenance of the project will be identified. No subsurface explorations or groundwater quantity or quality testing will be performed.

6.7 Wetlands

(David Evans and Associates) Existing wetlands will be identified from sources including the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory, the Washington State Department of Natural Resources (DNR) Natural Heritage Information System, local jurisdictions' wetland inventories, project GIS system, and other available environmental reports. Field reconnaissance and investigations will be limited to particularly sensitive wetland resources where existing data are not sufficient to adequately assess functions and values, evaluate potential impacts, and assess the potential for avoidance or effective mitigation. Investigations will not attempt to identify wetlands that may have been missed during previous studies.

Criteria for impacts will be developed. For each alternative, wetland areas affected will be estimated using GIS and reported to the nearest acre. Where sufficient existing data are not available to assess wetland functions and values adequately, an attempt will be made to assess the potential for avoidance or effective mitigation of those wetlands. For each alternative, potential permits will be identified. Delineation of wetland boundaries will be deferred until preparation of subsequent project-level environmental review.

6.8 Upland Vegetation, Habitat, Wildlife, and Threatened and Endangered Species

(David Evans and Associates) Known sensitive upland wildlife and plant species and priority habitats will be identified from USFWS data, the DNR Natural Heritage Information System, Washington State Department of Fish and Wildlife (WDFW) Non-Game Databases for Priority Habitats and Species, and local jurisdictions' inventories. Affected areas will be identified and estimated using GIS. Avoidance alternatives will be evaluated.

Field reconnaissance and investigations will be limited to particularly sensitive resources where existing data are not sufficient to adequately characterize impacts and assess the potential for avoidance or effective mitigation.

Preparation of a Biological Assessment under Section 7(c) of the Endangered Species Act will be tiered consistent with the corridor level of analysis provided in the EIS. The BA will

include species status and general description of existing habitat and limitations. Species life cycles and habitat needs will be described. The potential impacts of the proposed project alternative will be assessed, and a consequence call will be made. Mitigation measures will be proposed to avoid, reduce, or compensate for project impacts. The CONSULTANT will research existing literature and scientific data and interview experts to determine species distribution, habitat requirements, and other pertinent biological requirements for the target species. A subsequent project-level Biological Assessment will be prepared, if required, during follow-on project-level environmental review and preliminary engineering.

6.9 Fisheries, Habitat, and Threatened and Endangered Species

(David Evans and Associates) Watersheds, stream systems, fish species presence, status of salmonid (salmon and trout) species/stocks, and general fish habitat conditions and limitations will be described. Data sources will include the Surface Water discipline studies, published sources, project GIS database, professional experience, and data available from National Marine Fisheries Service (NMFS), USFWS, the DNR Natural Heritage Information System, WDFW Non-Game Databases for Priority Habitats and Species, and local jurisdictions' inventories. The report will focus primarily on salmonids, but will also address other fish species that are protected or of concern.

Crossings of streams, water bodies, or other sensitive areas will be identified and estimated using GIS. In addition, the expertise report will evaluate the project alternatives for their relative potential impact on fish populations. Mitigation measures to avoid and reduce impacts to fish habitat and populations will be proposed. For unavoidable impacts, mitigation measures may be proposed to compensate for adverse effects.

Field reconnaissance and investigations will be limited to particularly sensitive resources where existing data are not sufficient to adequately characterize impacts and assess the potential for avoidance or effective mitigation.

Preparation of a Biological Assessment under Section 7(c) of the Endangered Species Act will be tiered consistent with the corridor level of analysis provided in the EIS. The BA will include species status and general description of existing habitat and limitations. Species life cycles and habitat needs will be described. The potential impacts of the proposed project alternative will be assessed, and a consequence call will be made. Mitigation measures will be proposed to avoid, reduce, or compensate for project impacts. The CONSULTANT will research existing literature and scientific data and interview experts to determine species distribution, habitat requirements, and other pertinent biological requirements for the target species. A subsequent project-level Biological Assessment will be prepared, if required, during follow-on project-level environmental review and preliminary engineering.

6.10 Farmlands

(David Evans and Associates) Mapped farmlands classified as being of prime, unique, statewide, or local importance, and soils meeting the criteria of prime farmland or supporting farmland of statewide or local importance will be identified from U.S. Natural Resources Conservation Service maps, inventories of local jurisdictions, and other existing

sources. Affected areas will be estimated by type using GIS. Farmland Conversion Impact Rating (Form AD 1006) will be completed, if required, and avoidance alternatives will be evaluated.

6.11 Floodplains

(David Evans and Associates) Existing data describing floodplains will be identified and collected from National Flood Insurance Program (NFIP) maps, Federal Emergency Management Agency (FEMA) maps, and other state, county, or city flood plain or floodway information. For each alternative, areas lying within 100-year flood plains will be estimated using GIS. Potential permits will be identified.

6.12 Land Use and Shorelines

(McGowan Environmental, David Evans and Associates) Jurisdictional boundaries, Urban Growth Area boundaries, existing generalized land uses, future land use designations, and shoreline designations will be mapped from local jurisdictions' comprehensive plans or other existing sources contained in the project GIS data base. Zoning will not be mapped. Potentially affected land uses and the areas of effect will be identified and estimated using the GIS.

Coordination will occur with King and Snohomish counties and potentially affected local jurisdictions to augment identification and evaluation of indirect and cumulative impacts of changes in accessibility and mobility. The analysis also will rely on and refer to previous studies, data developed by the affected jurisdictions, and limited site reconnaissance. Current and anticipated trends in land use and development will be discussed. Shoreline management areas will be discussed in terms of the regulatory framework, restrictions on development, and the relative potential impacts of the alternatives. Pressures for change in land use, zoning, and the timing and density of development, as well as other indirect and cumulative impacts within the primary and secondary study areas will be discussed. Growth management issues and effects on rural lands outside the designated Urban Growth Area, if any, also will be identified.

6.13 Land Use and Transportation Plans and Policies

(McGowan Environmental, Mirai Associates, CH2M Hill, HNTB Corporation) The Vision 2020 Update, Regional Metropolitan Transportation Plan, State Highway System Plan, Washington Transportation Plan, local jurisdictions' comprehensive plans, and other applicable adopted plans and policies pertaining to land use, shorelines, and farmlands; transportation and related capital facilities; utilities; community services; and economic development will be reviewed. The consistency of the alternatives with these plans and policies will be evaluated and discussed. Potential inconsistencies of the alternatives with adopted plans and policies, if any, will be identified and evaluated.

6.14 Displacements and Right-of-Way Acquisition

(David Evans and Associates) Right-of way to be acquired, as well as residences and businesses that could be displaced or substantially disrupted will be estimated using GIS. The analysis will include developing a methodology for identifying when partial takes of improved parcels are assumed to be displacements, including comparing relative costs with mitigation costs (i.e., residential noise walls, vibration mats, wetland mitigation sites.) Opportunities to minimize property impacts will be identified during the alternative analysis. Existing available data will be used to generally describe ownership, tenants, household makeup, income status, employment, transportation, available replacement housing, and available property. Information regarding land use and economics will be accessed from the Land Use and Economics discipline studies, as well as from other existing sources. Mitigation options and relative costs will be discussed. Potentially displaced residents and businesses will not be contacted.

6.15 Hazardous Materials and Wastes

(CH2M Hill) Historical sources and environmental agency records will be researched. Historical sources will include historical aerial photographs available from WSDOT archives and historical fire insurance maps (Sanborn maps), where available, for selected portions of the corridors. Environmental agency records to be reviewed will include, subject to availability, the following databases:

- Federal NPL Site List and CERCLIS List
- Federal RCRA TSD Facilities List
- Federal RCRA TSD Generators List
- Federal ERNS List
- Washington States' Lists of Hazardous Waste Sites Identified for Investigation or Remediation (NPL and CERCLIS Equivalents)
- Washington States' Landfill or Solid Waste Site Lists
- Washington States' Leaking UST Lists
- Washington States' Registered UST Lists

To complete the review of these records, the services of a professional environmental data retrieval service will be used.

Limited site reconnaissance of sections of the corridor where historical or environmental agency records indicate the possible presence of hazardous wastes or hazardous substances, including petroleum products, will be performed. The site reconnaissance will not include any subsurface investigations or sampling of environmental media. Specific hazardous material surveys will not be performed. Locations within identified alternative alignments where possible hazardous building materials are present will be noted. Properties with identified or potential hazardous wastes or hazardous substances, including petroleum products, that exceed *de minimis* quantities, will be displayed in map form. Short- and long-term impacts related to conditions identified by the review will be identified. Mitigation measures for these impacts will also be identified.

6.16 Social Impacts

(CH2M Hill) Potentially affected neighborhoods along the project corridor will be described, including location, historic development patterns, demographics, community character, and community/social resources. The description will be based on existing documentation and telephone and/or personal interviews with local government staff. Impact assessment will be performed through GIS analysis and/or inspection of aerial photographs overlaid with major project components; reviews of land use and neighborhood plans; site visits to individuals neighborhoods as necessary; and reviews of other discipline studies, specifically including: Displacements/Relocations; Land Use; Transportation; Air Quality; Noise; Visual; and Recreation. Impacts will be described by neighborhood, and will include discussion of such potential impacts as changes in quality of life, barriers to social interaction, impacts to community resources, and effects on safety and security. Consultation with relevant local government staff will occur to assist in the identification of reasonable and acceptable mitigation of identified social and neighborhood impacts.

6.17 Economic Impacts

(CH2M Hill) Baseline conditions and trends in population, housing, employment, development, and level of economic activity within communities and the study area will be described.

Loss of tax revenues associated with right-of-way acquisition and displacements will be estimated based on GIS analyses and estimates of assessed valuation. Estimates will be prepared by multiplying acres of land displaced by land use category by estimated assessed values and levy codes. Assessed values and levy codes for each land use category will be estimated using information from the King County Department of Assessments and Snohomish County Assessor's Office. The results of the analysis will be comparisons of the initial property tax impacts of each alternative. Estimates will be prepared by City and compared to total tax revenues for each City to give perspective to the magnitude of the fiscal impacts of the project to various jurisdictions.

A comparative analysis of the relative impacts on local businesses of the different alternatives will be prepared. The analysis will draw on local and national research into the effects of congestion and access on business productivity, competitiveness, and growth. The analysis will be qualitative in nature, reflecting the lack of specificity in the definition of alternatives at the programmatic level.

6.18 Environmental Justice

(CH2M Hill) Impacts that have the potential to fall disproportionately on minority and/or low-income populations will be described in compliance with the following: Presidential Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations dated February 11, 1994; U.S. Department of Transportation (DOT) Order on Environmental Justice (DOT Order 5610.2) dated April 15, 1997; and Federal Highway Administration (FHWA) Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (FHWA Order 6640.23) dated December 2, 1998.

Minority and low-income populations in the project study area will be identified and described based on 1990 Census data. GIS maps depicting the locations of these

populations will be produced. The environmental consequences analysis will compare the distribution of impacts on minority and low-income populations relative to non-minority/non-low-income populations based on impacts as reported in other discipline studies conducted for this project. An identification of project benefits that may offset potentially disproportionate impacts will be made. The mitigation discussion will suggest, after consultation with relevant agencies, avoidance alternatives, and measures to minimize identified impacts on minority and low-income populations.

6.19 Recreation and Section 4(f) and 6(f) Resources

(David Evans and Associates) Potentially affected existing and planned publicly owned parks, trails, and recreational facilities; significant privately owned recreational facilities; and known Section 4(f) and Section 6(f) resources and the areas of effect will be identified from local park and recreation comprehensive plans and other existing inventories, and will be estimated using GIS. Types and general levels of recreation use will be identified based on information available from the resource owners. Potential construction and operational impacts on parks and recreation facilities will be discussed for each alternative. Field reconnaissance will be limited to resources where existing data are not sufficient to adequately characterize impacts and assess the potential for effective mitigation. Avoidance alternatives will be evaluated, and a range of potential mitigation responses will be identified.

Preparation of a Section 4(f) Evaluation under Section 4(f) of the Department of Transportation Act and an Environmental Impact Assessment (EIA) under Section 6(f) of the Land and Water Conservation Fund Act of 1965, if required, will be tiered consistent with the corridor level of analysis provided in the EIS. A subsequent project-level Section 4(f) Evaluation and EIA will be prepared, if required, during follow-on project-level environmental review and preliminary engineering.

6.20 Public Services and Utilities

(CH2M Hill, HNTB Corporation) The location of public service facilities will be mapped based on existing data and GIS analyses and, where relevant, the types of service provided, service area boundaries, levels of use, access requirements, and other significant characteristics or values associated with each service or facility will be described. The primary public services to be reviewed include the following: police and fire protection, medical and emergency services, and schools. Telephone contact and/or in-person interviews with public service providers will be conducted to obtain current information. Potential direct and indirect impacts resulting from both construction and operation will be described, and measures to minimize the identified impacts will be identified.

6.21 Visual Quality

(David Evans and Associates) The general landscape context of the study area will be described using information from published sources, visual observations, and professional expertise. The affected environment section will include the general landscape character of the study area, significant landforms, viewsheds and key viewpoints. The visual quality and character of the study area will be identified and the changes to this visual quality will be analyzed using procedures consistent with guidelines of the National Highway

Institute and the FHWA *Visual Impact Assessment for Highway Projects*.. The sensitivity of viewers to landform and visual resource changes will be estimated.

Exhibits will be prepared to illustrate the elements of the transportation improvements for the alternatives. Black and white illustrations will be used to graphically depict the representative elements of the alternatives. Three separate exhibits will be prepared for each build alternative.

The visual impact report will focus on broad changes in the landscape and how they will be perceived by the sensitive viewers. Recommendations will be made to mitigate the aesthetic impacts of the alternatives. The potential impacts of the project alternatives will be assessed and compared in a matrix format. Mitigation measures will be identified and recommended proposal based on the degree of negative aesthetic impact associated with each alternative.

6.22 Historic, Cultural, and Archaeological Resources

(CH2M Hill) Known/recorded historic, cultural, and archaeological resources will be identified based on information collected from the Washington State Office of Archaeology and Historic Preservation (OAHP). Local and regional comprehensive plans and other existing inventories (including previous investigations, historic maps, and documents) will also be collected. Limited field reconnaissance (windshield survey) may be conducted to identify potential historic properties (buildings, structures and archaeological high probability areas). Low level consultations with tribes will be initiated, as appropriate.

The investigation will concentrate on identification of National or State Register listed or determined eligible properties. Potential impacts to identified cultural resources and potential mitigation measures will be discussed. Avoidance alternatives will be evaluated. To the extent feasible with collected data, historic, cultural, or archaeological resources that may qualify as Section 4(f) or Section 6(f) resources will be identified.

Any identified archaeological site(s) will only be plot mapped and photographed; no formal archaeological site record forms will be completed. Any identified historic buildings or structures will only be plot mapped and photographed; no formal historic property inventory forms will be completed. Tribal consultations will be limited to a letter and one to two phone calls. Agency consultations will be limited to a meeting with the Washington SHPO and letter and/or telephone communications with local governments to secure planning documents and historic resource inventory lists, etc. Historic context statements will not be developed.

Consultation under Section 106 of the National Historic Preservation Act and preparation of a Section 4(f) Evaluation under Section 4(f) of the Department of Transportation Act, if required, will be tiered consistent with the corridor level of analysis provided in the EIS. A subsequent project-level Section 106 consultation and Section 4(f) Evaluation and EIA will be prepared, if required, during subsequent project-level environmental review and preliminary engineering.

7.0 Project Schedule

The preliminary proposed project schedule is based on the following key milestones:

<u>Activity/Milestone</u>	<u>Estimated Date</u>
Form Interdisciplinary Team	7/99
Draft Study Plan Complete	7/99
Public Involvement Plan Complete	7/99
Issue Notice of Intent	9/99
Issue Determination of Significance	9/99
Develop Preliminary Range of Solution Concepts	10/99
Begin Scoping Process	10/99
Conduct Agency Scoping Meeting (one)	11/99
Conduct Public Scoping Meetings (two)	10/99
Confirm Initial Range of Solution Concepts	10/99
Confirm Primary Study Area	10/99
Develop Screening Criteria and Measures of Effectiveness	10/99
Conduct Fatal Flaw Review of Initial Concepts	11/99
Refine Viable Concepts Into Planning-Level Alternatives	11/99
Identify Data Needs For Second Stage Screening	11/99
Conduct Screening Study of Viable Alternatives	2/00
Refine Alternatives Through Value Analysis	3/00
Confirm Range of Corridor Alternatives	2/00
Prepare Methodology Reports	2/00
Conduct Evaluation of Corridor Alternatives	6/00
Discipline Studies Complete	7/00
Preliminary Draft EIS (PDEIS) Complete	10/00
PDEIS Review Comments Due	10/00
Camera-Ready Draft EIS (DEIS) Complete	11/00
FHWA Approve Camera-Ready DEIS	11/00
Circulate Draft EIS	11/00
Public Hearing	1/01
End Review and Comment Period	2/01
Respond to Public and Agency Comments on DEIS	4/01
Select Preferred Alternative	2/01
Preliminary Final EIS (PFEIS) Complete	4/01
PFEIS Review Comments Due	4/01

Camera-Ready Final EIS (FEIS) Complete	5/01
FHWA Approve Camera-Ready FEIS	5/01
Circulate FEIS	5/01